

0

Customer 2

Customer 8 ★ 2/02

Customer 72102

Customers  
1,425  
★ 201

Customer 9 202

Customer 62102 ★

DC 10

Customer 3

2020

Fig. 1A

Example Direct Shipping Cost Database (cost per 5 lbs.)

		112a	112b	112c		112d
		Distribution Center ("DC") 1	DC 2	DC 3		DC N
111a	0-5 miles, courier	\$10.00	-	-	...	-
111b	0-150 miles, domestic ground	\$2.25	\$2.00	\$2.00		\$2.00
111c	150-1000 miles, domestic ground	\$3.00	\$2.50	\$2.50		\$3.00
111d	1000-2500 miles, domestic ground	\$4.00	\$3.50	\$3.50		\$4.50
111e	2500+ miles, domestic ground	\$5.00	\$4.50	\$4.50		\$6.00
111f	0-3000 miles, domestic next day air	\$8.50	\$8.50	\$8.50		\$8.00
111g	3000+ miles, domestic next day air	\$12.00	\$12.00	\$12.00		\$11.00
111h	0-3000 miles, foreign air	-	\$19.00	\$19.00		\$20.00
		⋮				

**Figure 1B**

Example Direct Labor Cost Database

		116a	116b	116c		116d
		DC 1, Processing Lane 1	DC 1, Processing Lane 2	DC 2, Processing Lane 1		DC N, Processing Lane M
115a	Order Type 1	\$0.50	\$0.50	\$0.75	...	-
115b	Order Type 2	-	\$0.75	\$0.75		-
115c	Order Type 3	\$1.00	-	\$0.75		-
		⋮				
115d	Giftwrapping	-	\$2.00	-		\$2.00
		⋮				

**Figure 1C**

Example Direct Packing Material Cost Database

		120a	120b		120c
		DC 1	DC 2		DC N
119a	Order Type 1	\$0.50	\$0.50	...	\$0.50
119b	Order Type 2	\$0.20	\$0.25		-
		⋮			

**Figure 1D**

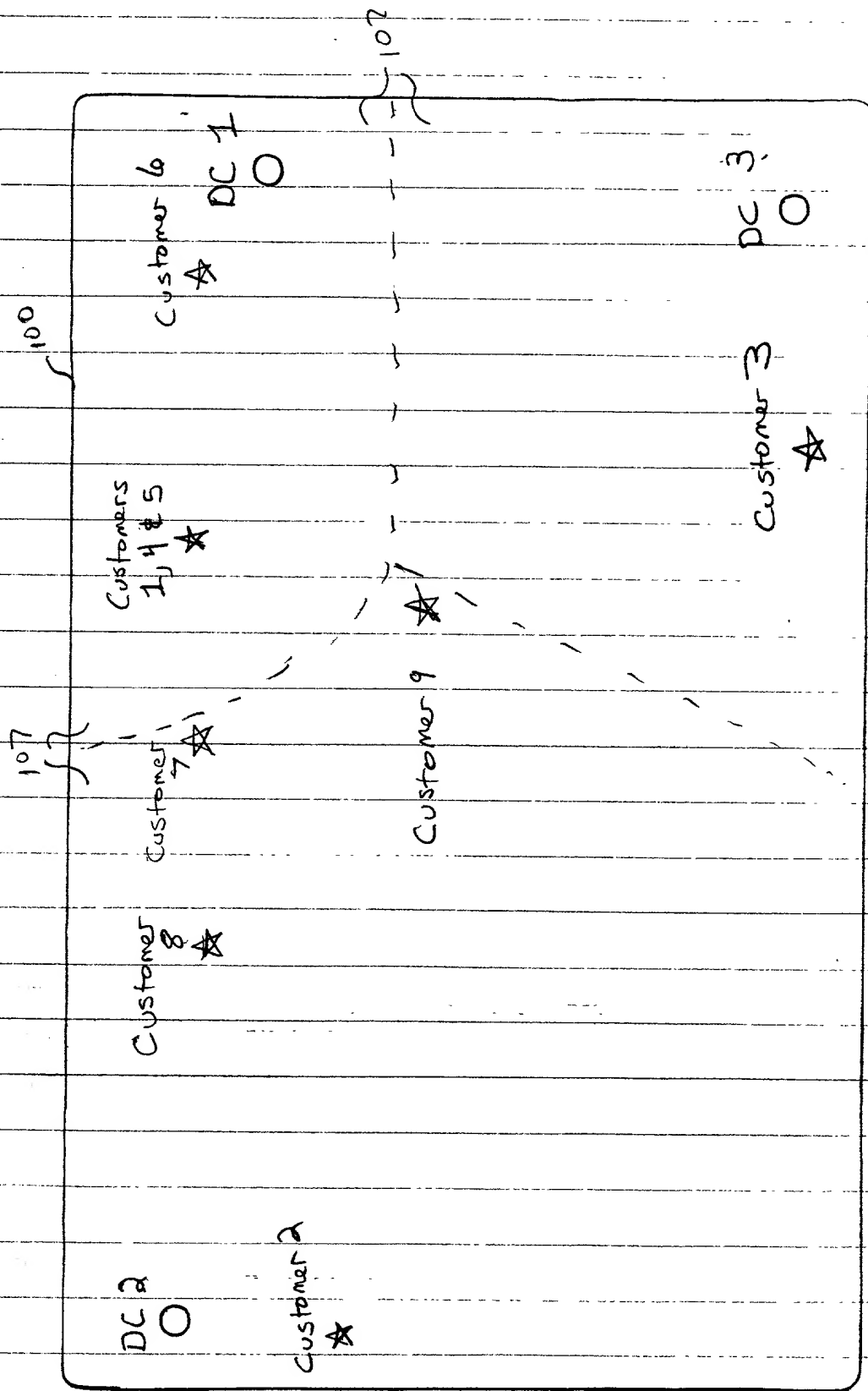


Fig. 7E

Example Estimated Customer Goodwill Cost From Expected Delivery Date Deviation Database

		124a	124b	124c	
		Customer 1	Customer 2	Customer 3	
		⋮			
123a	1 day early	\$-5.00	-	\$-1.00	...
123b	on-time	-	-	\$-0.50	
123c	1 day late	\$2.00	\$2.00	\$1.00	
123d	2 days late	\$5.00	\$2.50	\$1.00	
123e	3 days late	\$10.00	\$3.00	\$2.00	
123f	4 days late	\$25.00	\$5.00	\$1.75	
		⋮			

**Figure 1F**

Example Estimated Customer Goodwill Cost From Expected Order Split Deviation Database

		128a	128b	128c	
		Customer 1	Customer 2	Customer 3	
		⋮			
127a	1 less order split	\$-2.50	-	\$-0.25	...
127b	expected # of order splits	-	-	\$-0.10	
127c	1 more order split	\$0.50	\$0.50	\$0.25	
127d	2 more order splits	\$1.25	\$0.65	\$0.25	
127e	3 more order splits	\$2.50	\$0.75	\$0.50	
127f	4 more order splits	\$6.25	\$1.25	\$0.40	
		⋮			

**Figure 1G**

### Example New Order Optimal Allocation Database

		132a	132b	132c		132d
		DC 1, Processing Lane 1	DC 1, Processing Lane 2	DC 2, Processing Lane 1		DC N, Processing Lane M
		⋮				
131a	7am-8am EST Order Type 1	25	15	60	...	-
131b	7am-8am EST Order Type 2	-	30	10		-
		⋮				
161c	8am-9am EST Order Type 1	25	25	50		-
161d	8am-9am EST Order Type 2	-	30	20		-
		⋮				

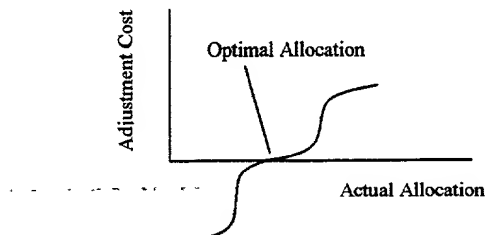
**Figure 1H**

### Example New Order Actual Allocation Differential

		136a	136b	136c		136d
		DC 1, Processing Lane 1	DC 1, Processing Lane 2	DC 2, Processing Lane 1		DC N, Processing Lane M
		⋮				
135a	7am-8am EST Order Type 1	-	+30	-5	...	-
135b	7am-8am EST Order Type 2	-	+5	-5		-
		⋮				

**Figure 1I**

### Example New Order Allocation Adjustment Formula



**Figure 1J**

Example Order Fulfillment Plan Option Comparison (for order by Customer 1 of Type 2 with 2 items)

	140a	140b	140c	140d	140e	140f	140z
	Direct Shipping Cost	Direct Labor Cost	Direct Packing Material Cost	Delivery Date Customer Goodwill Cost	Order Split Customer Goodwill Cost	Allocation Adjustment Cost	Total Cost
139a	both items from DC 1, Processing Lane 2; standard shipping	\$3.00	\$0.75	\$0.20	-	\$0.25	\$4.20
139b	both items from DC 2, Processing Lane 1; standard shipping	\$3.50	\$0.75	\$0.25	-	-\$1.00	\$3.50
139c	item 1 from DC 1, Processing Lane 2; and item 2 from DC 2, Processing Lane 1; standard shipping	\$6.50	\$1.50	\$0.45	\$0.50	-\$0.35	\$8.60
	::						
139d	both items from DC 1, Processing Lane 2; Next Day Air shipping	\$8.50	\$0.75	\$0.20	-\$5.00	\$0.25	\$4.70
	::						

Figure 1K

100

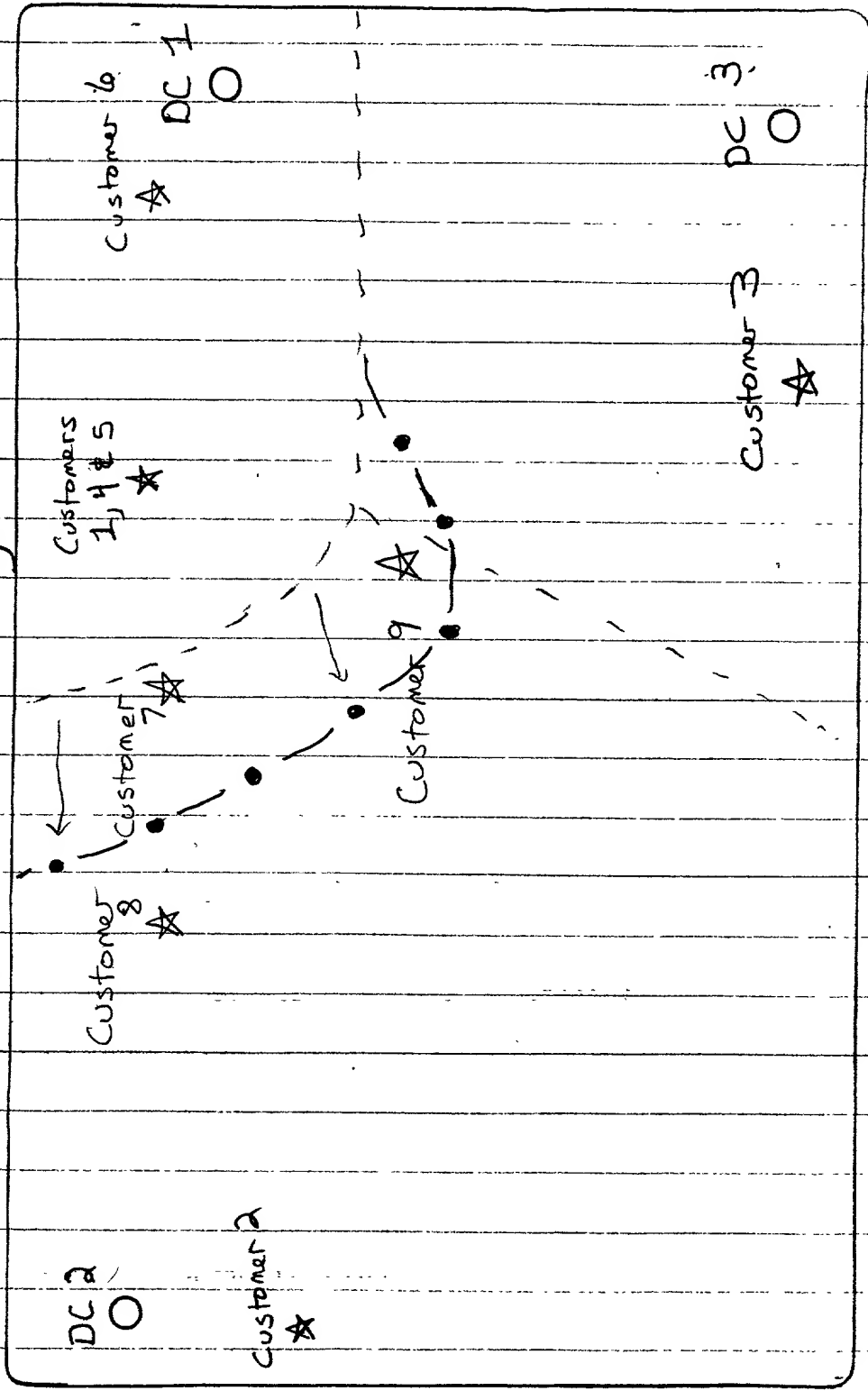


Fig. 1L

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~ Enya

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Fig. 2A



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~ Enya

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Work-Std Shipping - 09/08/XX	—
Work-Next Day Air - 09/04/XX	+\$5.50
Home-Std Shipping - 09/07/XX	-\$0.50
:	:

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Actual Delivery Information

IF default ordering is used, this item will be shipped from the Seattle distribution center on 09/03/XX and will be received by you on 09/08/XX, with a total cost of \$27.19.

215a  
215b  
215c

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Fig. 2B


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Click the "Place your order" button to complete your purchase.

 **Place your order**

#### Shipping to: [Change](#)

Customer 1  
Work  
123 Main St.  
Seattle, WA 98101

#### Shipping Options: [Learn more about shipping prices and policies](#)

☒ Standard Shipping From the Seattle DC  
(09/08/XX - \$3.50)

☐ Next Day Air (09/04/XX - \$8.50)

☐ Standard Shipping + Enhanced Priority  
Processing (09/07/XX - \$5.50)

☐ Next Day Air + Immediate Processing  
(09/03/XX at 10:30am - \$16.50)

☐ Standard Shipping From the Atlanta DC  
(09/08/XX - \$3.85)

☐ Standard Shipping from the Disadvantaged Youth  
Processing Lane (09/07/XX - \$4.50 + \$1.50)

**Kenny Loggins Alive Kenny Loggins (Primary Contributor)**

**\$21.49** - Quantity : 1 Usually ships in 2-3 days

**Gift Options:** None [Change](#)

#### Order Summary

Items:	\$21.49	} 225
Shipping & Handling:	\$3.50	
Total Before Tax:	\$24.99	} 235
Tax:	\$2.30	

**Order Total: \$27.19**

#### Have a gift certificate or promotional code?

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MasterCard: \*\*\*-12345

Exp: 12/2003


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Fig. 2C

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HARDWARE

Your Account > Order History > Order Summary #104-1234567

Order Placed: Sept. 2, 20XX at 02:45 PM PDT

**Order Total: \$27.19**

**When will your items arrive?**

**Not Yet Shipped:** Item 1 will arrive at the Seattle DC from external inventory storage by 5pm on 09/02/XX, and will be behind approximately 100 orders in a queue of orders ready for processing by Processing Lane 3. Order processing will begin at approximately 8am on 09/03/XX and will be completed by 8:30am on 09/03/XX. The order will be shipped from the DC at approximately 10am on 09/03/XX by ABC Shipping.

Delivery Time: 09/08/XX

**Shipping Address:** Change

Customer 1  
Work  
123 Main St.  
Seattle, WA 98101

**Items Ordered**

1 of: **Kenny Loggins Alive** Kenny Loggins

**Price**

**\$21.49**

- Availability: 1 in stock

- Gift-wrap and note: None Change

**Shipping Method:** Change

Standard Shipping

**Shipping Option:** One shipment when complete order is ready.

Item(s) Subtotal: \$21.49  
Shipping & Handling: \$3.50

Total Before Tax: \$24.99  
Estimated Tax: \$2.20

-----  
**Grand Total for This Order: \$27.19**

Fig. 2D

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~ Enya

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You Save: \$3.49 (14%)

Actual Delivery Time:

**Rated: NR**

Using standard shipping, this item will be delivered to you on 09/07/XX. Other manners of shipping are not available to you.

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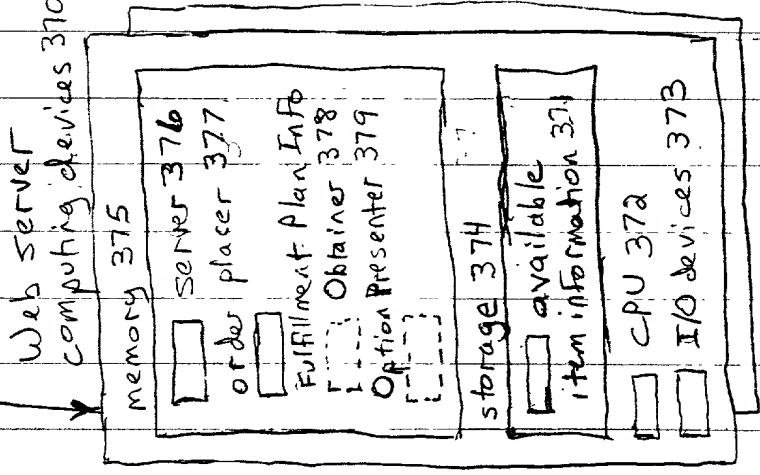
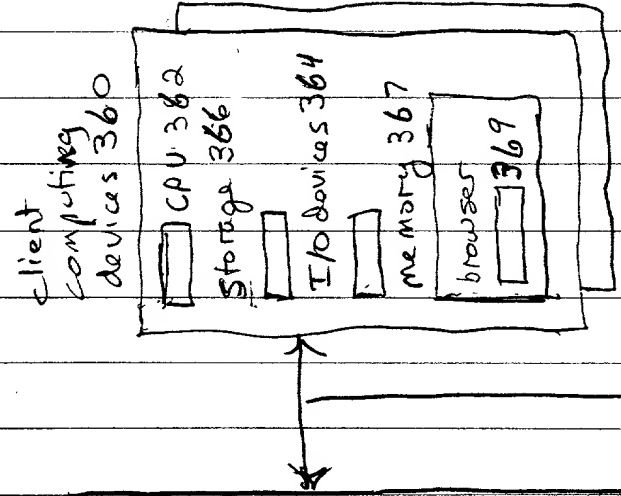
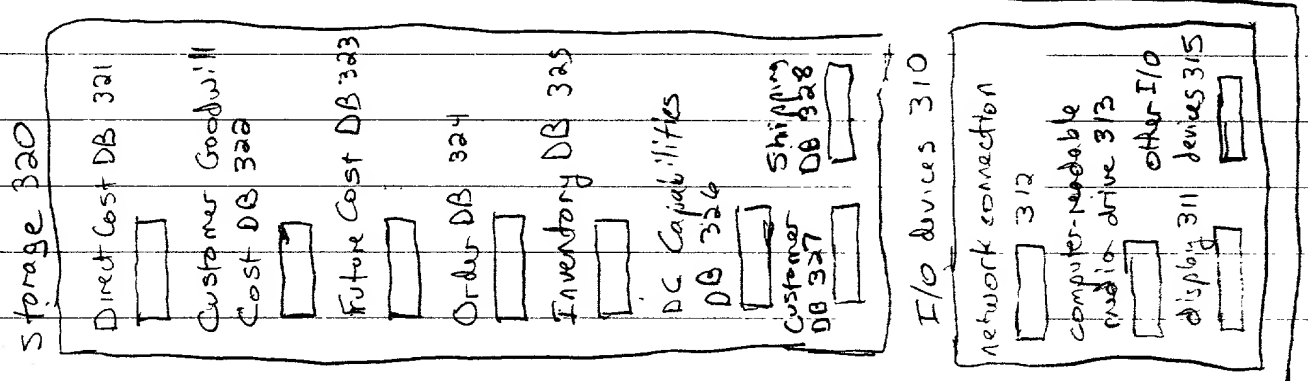
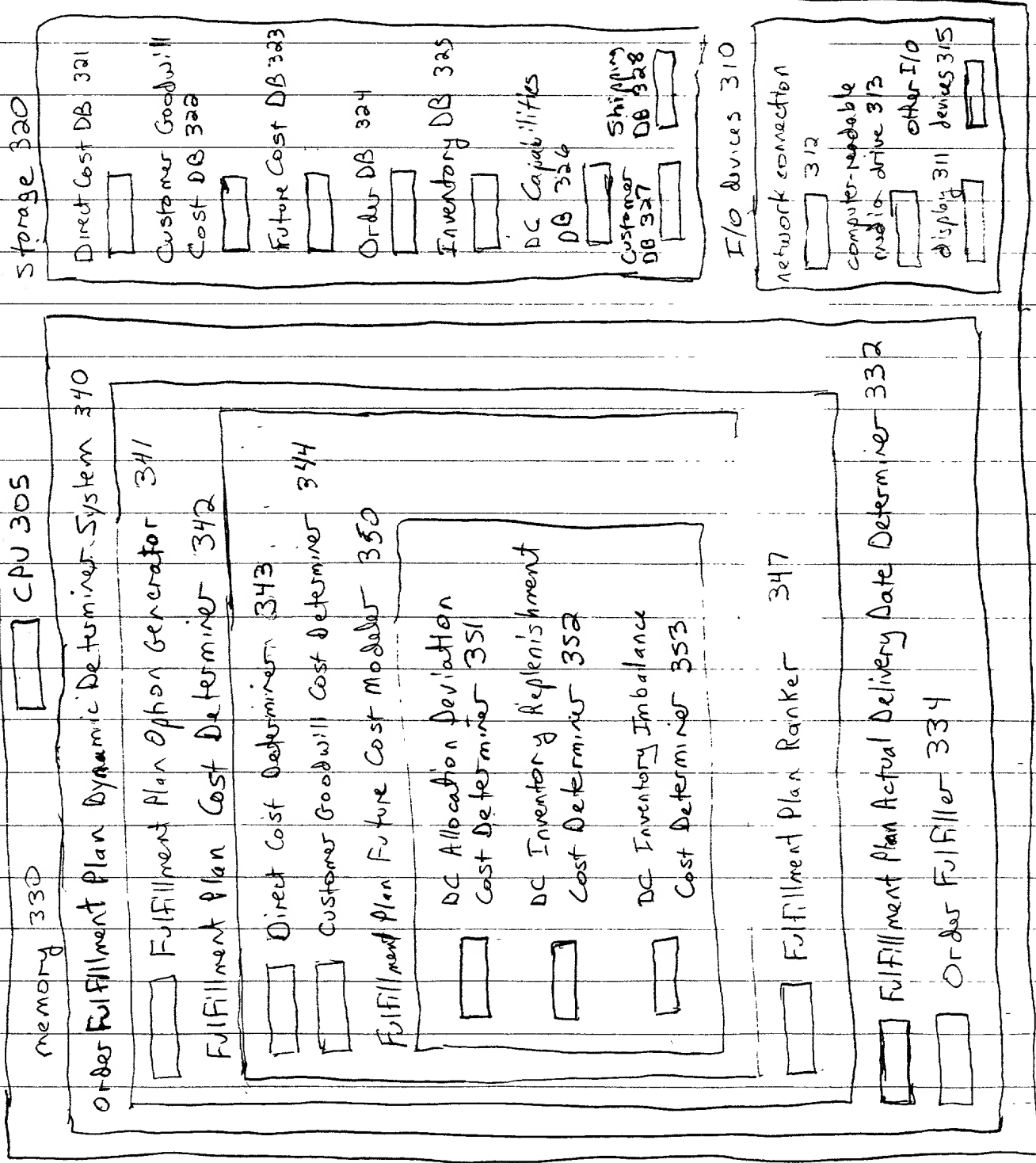
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Fig. 2E

Fig. 3

order fulfillment computer system 300



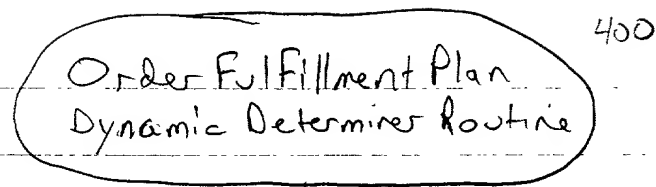


Fig. 4

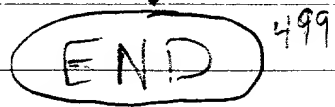
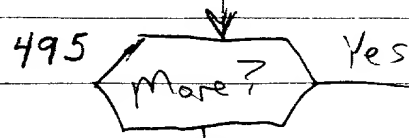
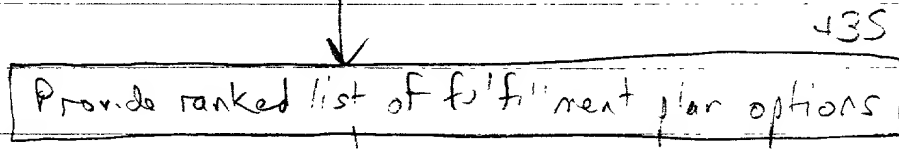
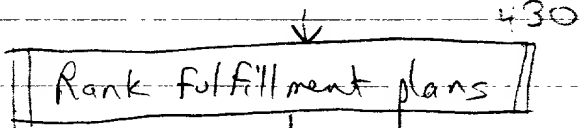
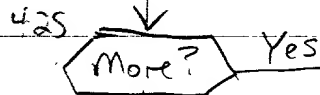
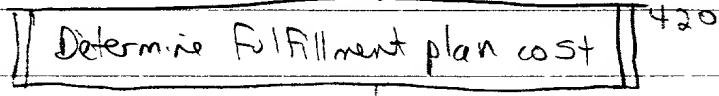
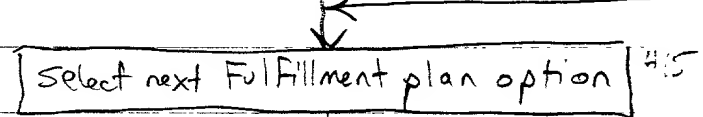
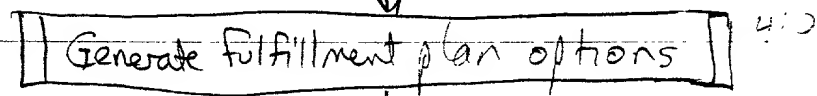
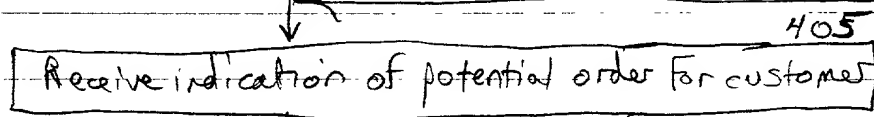


Fig. 5

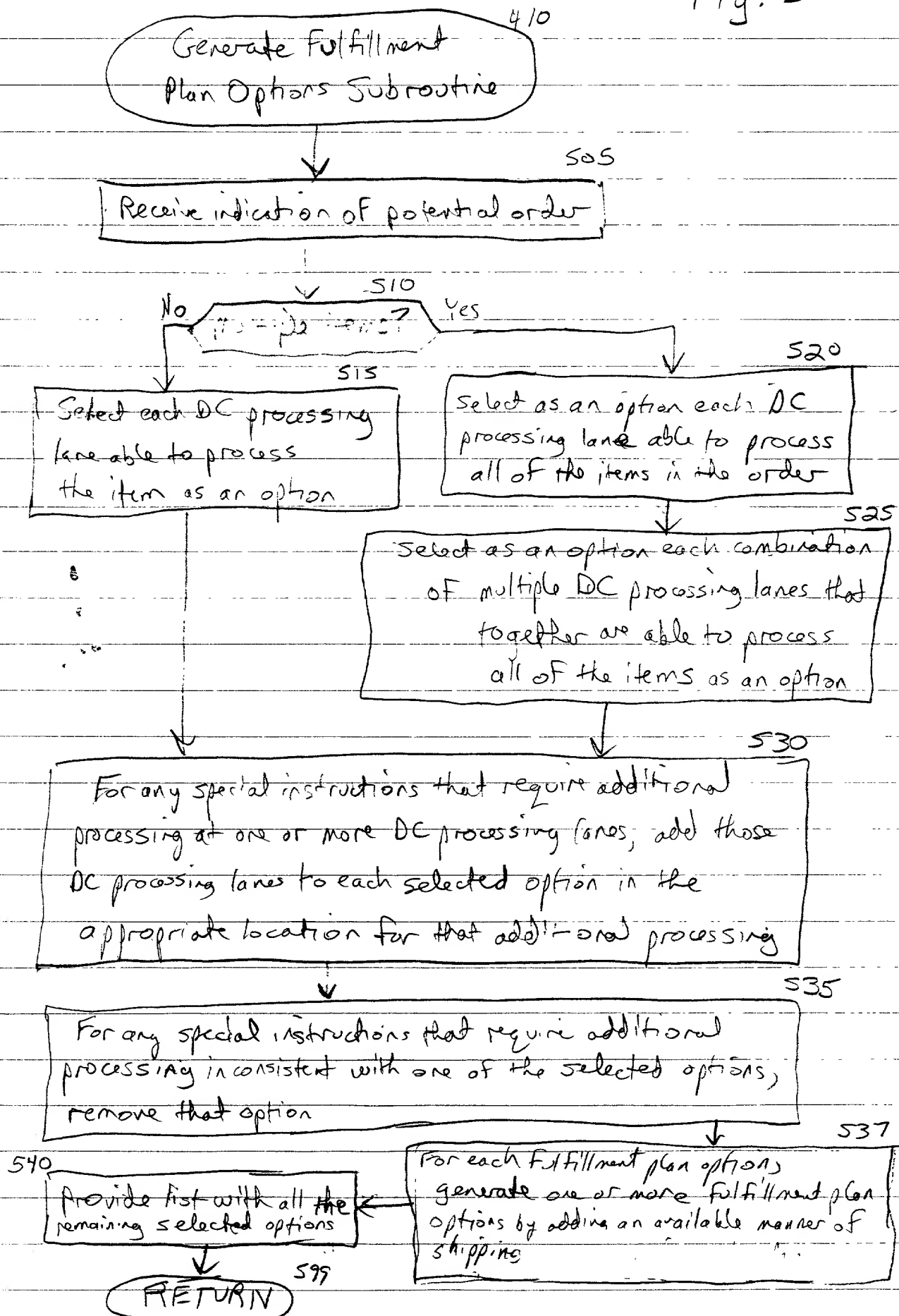
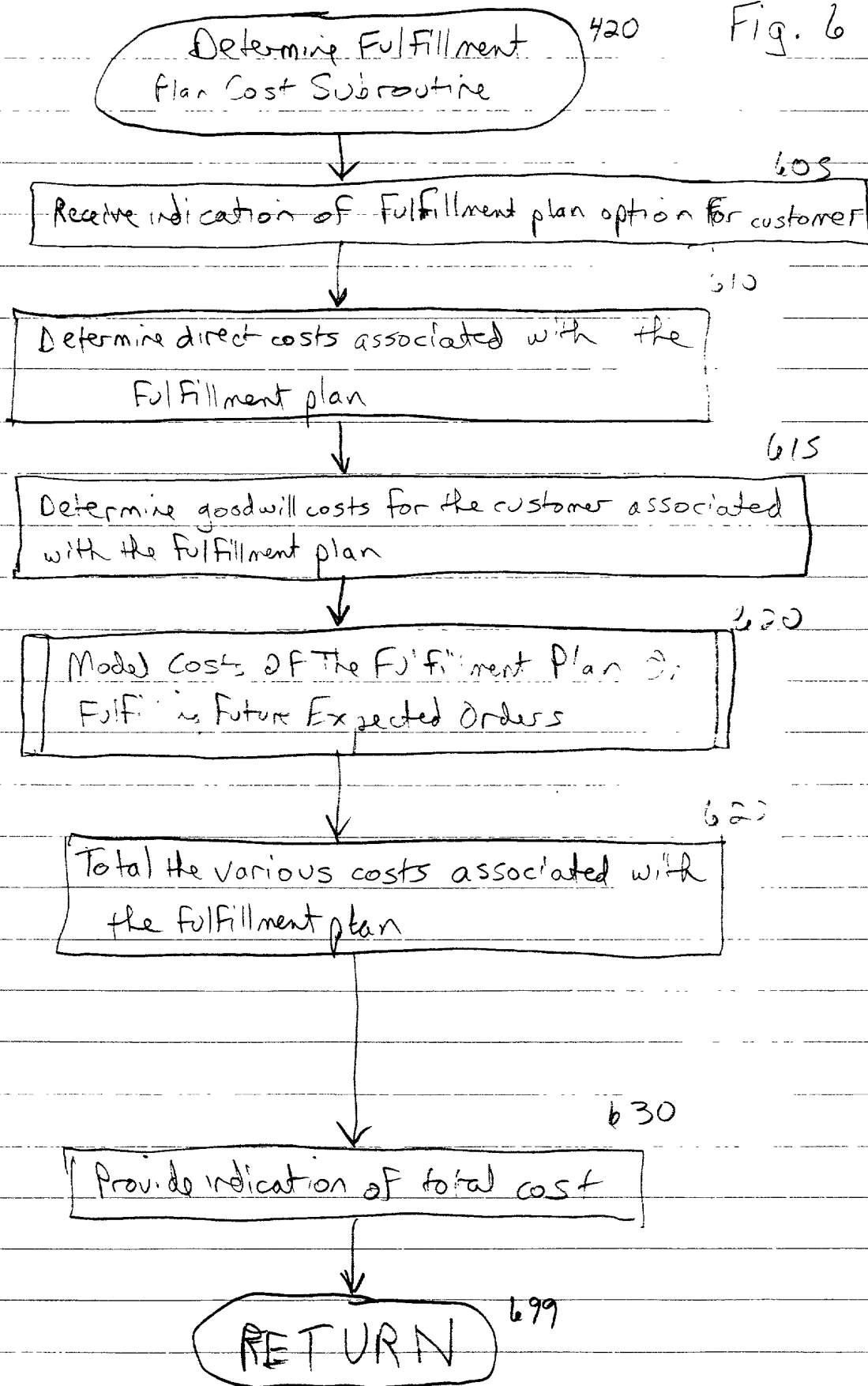


Fig. 6





Model Fulfillment Plan Future  
Costs Subroutine

705  
Receive indication of fulfillment plan option for customer

710  
Assign cost to any additional deviation caused by  
Fulfillment plan from optimal or expected allocation for  
processing lane(s) that will fulfill the plan

715  
Assign costs of any future inventory replenishments  
that will be incurred to fulfill future orders based on  
fulfilling this order

720  
Assign cost associated with any current imbalance in  
inventory of the ordered items among the DCs

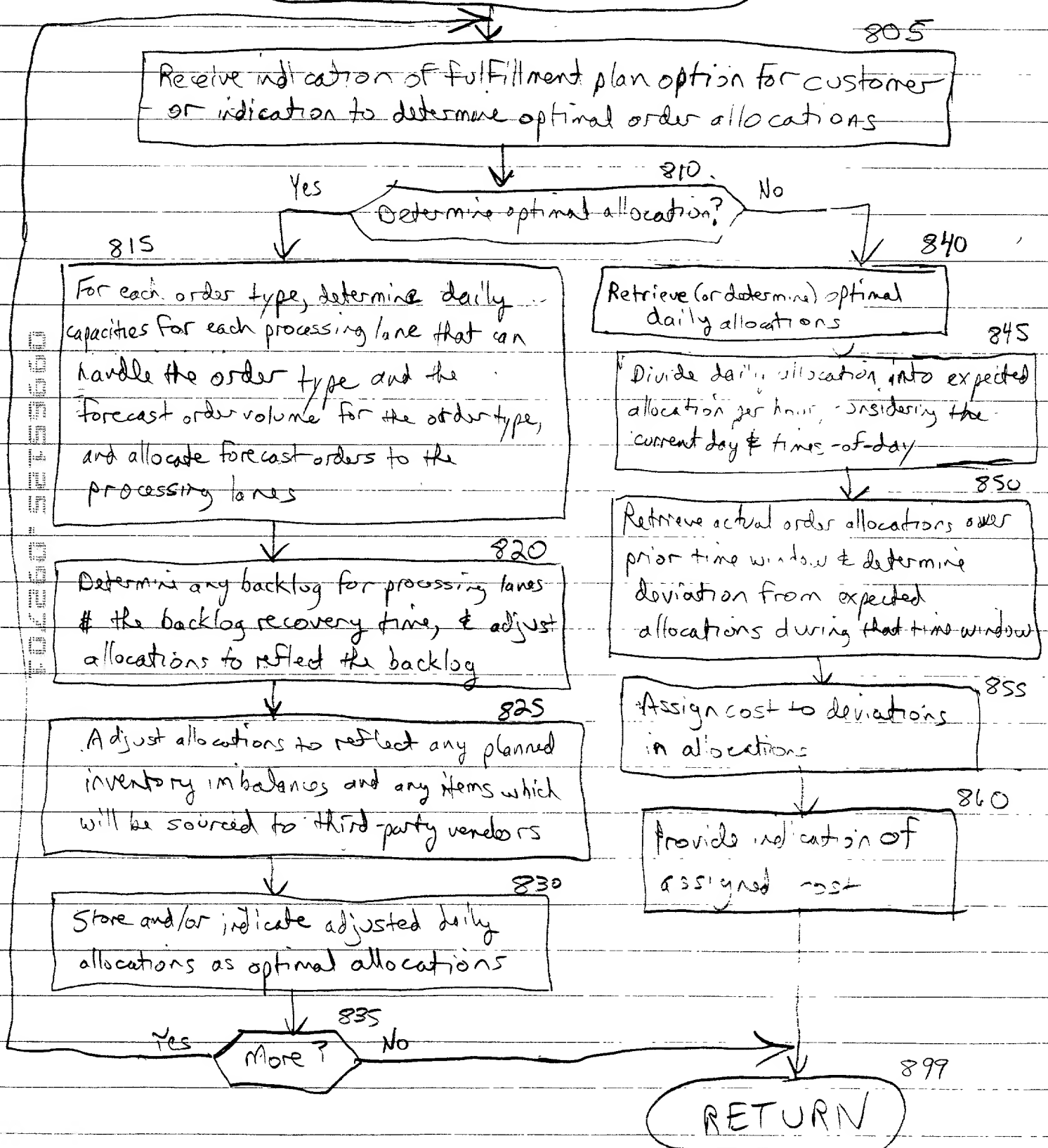
730  
Total the costs assigned to the fulfillment plan  
to represent impact on fulfilling future orders

735  
Provide indication of totaled cost

799  
RETURN

# Assign Allocation Recommendation Cost Subroutine

Fig. 8



# Assign Inventory Imbalance Costs Subroutine

905  
Receive indication of fulfillment plan option for customer or indication to determine expected run rates for some or all items

910  
Determine expected run rates?

Yes

No

915  
For each item of interest and each DC that supplies the item, determine daily expected run rates for that item in the region typically served by that DC by analyzing historical purchase patterns and considering day-based variations, regional demand, and any other available relevant information

930  
Retrieve (or determine) daily expected run rates for each combination of DC and item to be fulfilled from that DC for the fulfillment plan

935  
Retrieve actual run rates over prior time window for each item in the order at the DC from which it is to be fulfilled, & determine deviation from expected run rate during that time window for that item at that DC

920  
Store and/or indicate daily expected run rates for the items of interest and the DCs

940  
Assign cost to deviations in allocations

945  
Provide indication of assigned cost

Yes

925  
More?

No

999  
RETURN

# Assign Future Inventory Replenishments Costs Subroutine

Receive indication of Fulfillment plan option for customer

Determine default DC for the customer and/or fulfillment plan option

Select next DC that is part of the fulfillment plan

Default DC?

Determine the current inventory and projected run rate at the selected DC for the item(s) to be fulfilled from that DC, and the time of scheduled replenishment of those items

Are one or more of the items in-stock now or expected to go out of stock before replenishment?

For each such item, assign expected cost of expedited future replenishment for the ordered items and the expected cost of customer goodwill delivery delay for a future order for the ordered items to the fulfillment plan

More DCs?

Total the assigned costs for the fulfillment plan, and provide indication of the total assigned costs

RETURN

1005  
1010  
1015  
1020  
1025  
1030  
1035  
1040  
1045  
1099

430

Fig. 11

Rank Fulfillment  
Plans Subroutine

Receive indications of fulfillment  
plans and of determined associated costs

Optionally receive indication of ranking criteria

No

Indicated ranking criteria?

Yes

Rank Fulfillment plans  
based on associated costs

Rank Fulfillment plans  
based on indicated criteria

Provide ranked list of Fulfillment options

RETURN

FIG. 11

Fig. 12

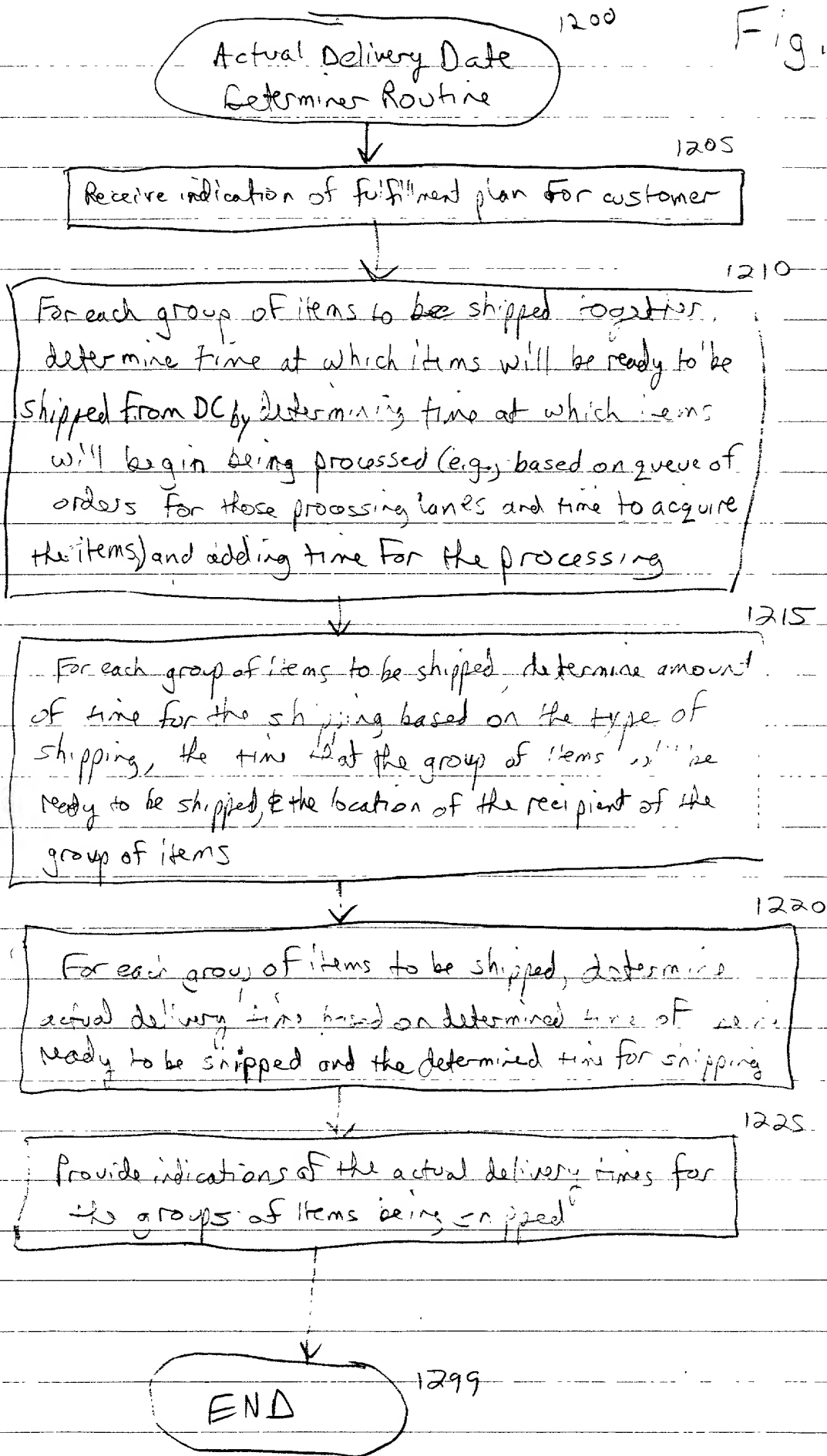


Fig. 13

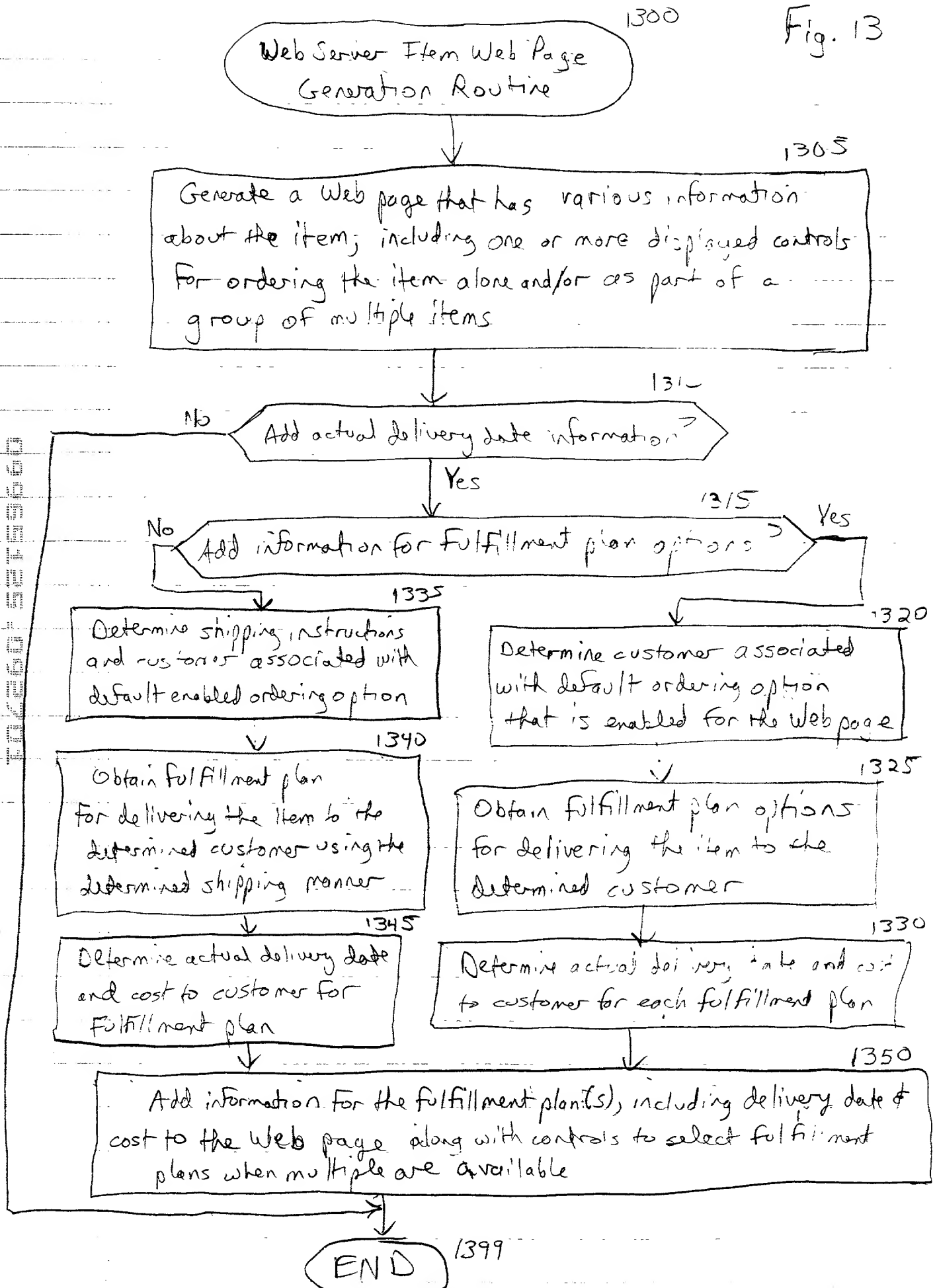


Fig. 14

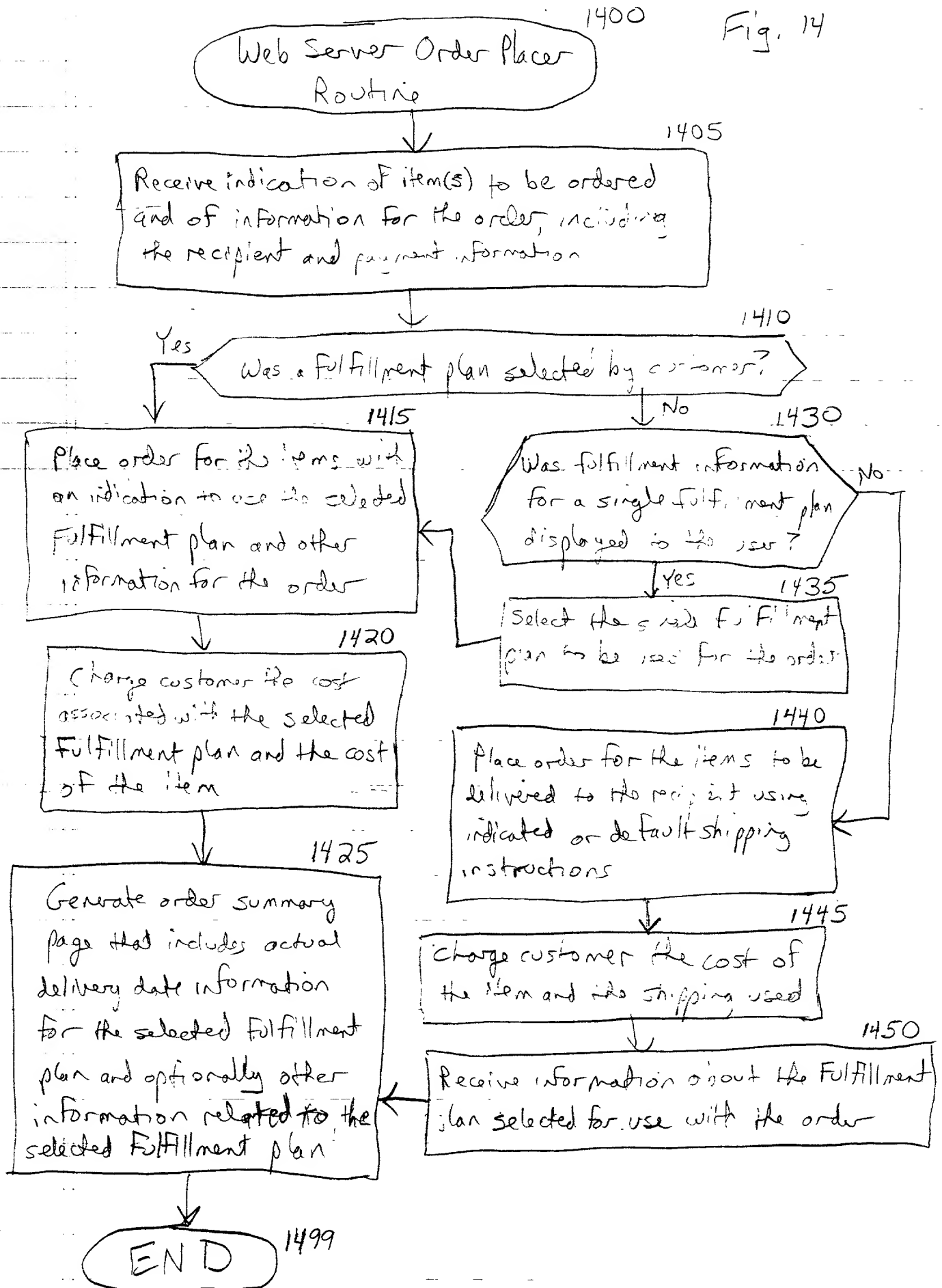
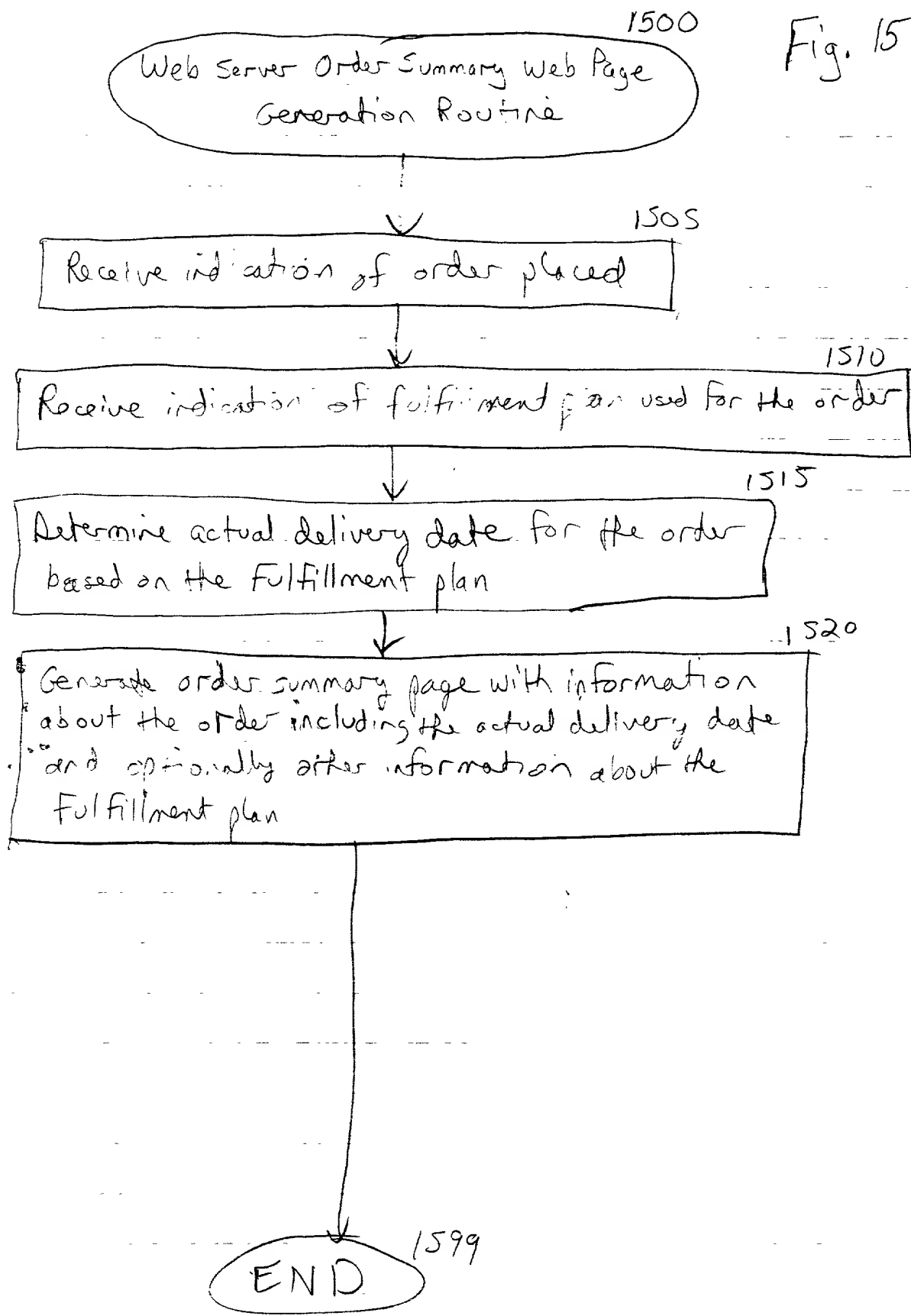




Fig. 15



1600

Fig. 16

Web Server Shopping Cart Web Page  
Generation Routine

